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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,353	04/13/2004	Phillip C. Watts	027483-000100US	4721

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EXAMINER

MOWLA, GOLAM

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

07/07/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/823,353

Applicant(s)

WATTS, PHILLIP C.

Examiner

GOLAM MOWLA

Art Unit

1795

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-22 and 24 is/are pending in the application.
- 4a) Of the above claim(s) 17-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-16 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/27/2009 has been entered.

Response to Amendment

2. Applicant's amendment of 04/27/2009 does not place the Application in condition for allowance.

3. Claims 8-22 and 24 are currently pending. Applicant has amended claims 8, 9 and 12-16, cancelled claims 1-7 and 23, and added new claim 24. Claims 17-22 are withdrawn from consideration as being part of non-elected invention.

4. The amendment filed 04/27/2009 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

Claim 1 recites the limitation "each of the second thermal modules is configurable in at least two axes with respect to the first thermal module such that each of the second thermal modules accommodates tolerance variation in its respective

thermoelectric module" in lines 27-30m which is not supported by the original disclosure as filed.

Claim 15 recites the limitation "at least one of the plurality of second thermal modules compliantly coupled with at least one other of the second thermal modules such that the thermal modules have three axes of movement relative to the each other" in lines 6-8, which is not supported by the original disclosure as filed.

Claims 16 recites the limitation "at least one other of the second plurality of first thermal modules" in line 7, which is not supported by the original disclosure as filed. Both Fig. 1 and 2 show only one first thermal module (hot block 7), not a plurality of the first thermal module.

Applicant is required to cancel the new matter in the reply to this Office Action.

Status of the Objections or Rejections

5. Due to Applicant's amendment to claims 8, 9 and 12-16, all rejections from the office Action dated 01/30/2009 are withdrawn. However, upon further consideration, a new ground(s) of rejection is/are presented below.

Claim Objections

6. Claim 9 is objected to because of the following informalities: claim 9 recites the limitation "...such that **at** the first thermal module and at least one of the plurality of the thermoelectric modules is compressed..." in lines 5-7. It is suggested to delete -at- after -that- in line 5. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 8-16 and 24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 recites the limitation "each of the second thermal modules is configurable in at least two axes with respect to the first thermal module such that each of the second thermal modules accommodates tolerance variation in its respective thermoelectric module" in lines 27-30, which is not supported by the original disclosure as filed. Claim 15 recites the limitation "at least one of the plurality of second thermal modules compliantly coupled with at least one other of the second thermal modules such that the thermal modules have three axes of movement relative to the each other" in lines 6-8, which is not supported by the original disclosure as filed.

Applicant argues that "each of the cold blocks is free to conform itself to the surfaces of the thermoelectric modules, by virtue of compression from spring 15 and rod 16, as well as O-ring connection 13 between the cold block segments", and therefore "this conformance, or compliance, permits each of the second thermal modules to configure itself in at least two axes" (see remarks, page 4).

Examiner notes the original disclosure as filed is completely silent as to such conformance. Paragraph [0004] of the specification notes that the embodiment "allows

for mechanical thermal expansion and contraction in three axis while maintaining compression equally on all members of the parallel plane stack of thermoelectric modules", and Paragraph [0011] of the specification also notes that the "embodiment allows all axis expansion, contraction and natural mechanical variance in stack elements". However, these portions talk about mechanical thermal expansion and contraction, not configuration ("each of the second thermal modules is configurable in at least two axes ...") as claimed in claim 1.

Claim 15 recites the limitation "at least one of the plurality of second thermal modules compliantly coupled with at least one other of the second thermal modules such that the thermal modules have three axes of movement relative to the each other" in lines 6-8, which is not supported by the original disclosure as filed. Examiner notes the original disclosure as filed is completely silent as to such conformance. Paragraph [0004] of the specification notes that the embodiment "allows for mechanical thermal expansion and contraction in three axis while maintaining compression equally on all members of the parallel plane stack of thermoelectric modules", and Paragraph [0011] of the specification also notes that the "embodiment allows all axis expansion, contraction and natural mechanical variance in stack elements". However, these portions talk about mechanical thermal expansion and contraction, not "three axes movement" as claimed in claim 15.

Claims 16 recites the limitation "at least one other of the second plurality of first thermal modules" in line 7, which is not supported by the original disclosure as filed.

Both Fig. 1 and 2 show only one first thermal module (hot block 7), not a plurality of the first thermal module.

Claim Rejections - 35 USC § 103

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claims 8-15 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake et al. (US 5917144) in view of Brittain et al. (US 5450869).

Regarding claims 8 and 14-15, Bass discloses a thermoelectric generator (see fig. 2, 3, 7, 8, 9 and 14) (col. 5, line 9 to col. 9, line 42, and col. 12, lines 10-54) for generating electricity from a temperature differential between a first fluid (exhaust gas) and a second fluid (cooling water) (col. 3, line 64 to col. 4, line 27), the thermoelectric generator comprising:

- a plurality of thermoelectric modules (thermoelectric generating unit 1), wherein:
 - each of the thermoelectric modules (1) comprises a first side and a second side (see fig. 2); and
 - each of the thermoelectric modules (1) generates electricity when there is a difference in temperature between the first side and the second side (col. 1, lines 26-39);
- a first thermal module (heat input part 3), wherein:
 - first thermal module (3) is configured to receive the first fluid (exhaust gas) (fig. 9); and

- first thermal module (3) is configured to exchange heat with the first sides of at least two of the plurality of thermoelectric modules (top and bottom thermoelectric generating unit 1); and
- a plurality of second thermal modules (radiation part 2), wherein:
 - each of the plurality of second thermal modules (2) is configured to receive the second fluid (cooling water, see fig. 14); and
 - a side of each of the second thermal modules (2) is configured to exchange heat with exactly one of the thermoelectric modules through the second side of the respective thermoelectric module (see fig. 2).

However, the reference is silent as to whether each of the second thermal modules is configurable in at least two axes with respect to the first thermal module such that each of the second thermal modules accommodates tolerance variation in its respective thermoelectric module.

Brittain teaches a thermoelectric converter (see fig. 1c) including a compression mechanism comprising a spring (12) and metal rod (follower) is placed between electrodes (14) and heat sink (17) in order to allow compression between the heat sink and the heat source (8) (col. 2, lines 22-59).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized the compression mechanism of Brittain in between the radiating part (2) and electrodes of the thermoelectric module (1) in order to allow compression between the heat sink and the heat source, as taught by Brittain.

The compression mechanism of Brittain allows each of the second thermal modules is configurable in at least two axes with respect to the first thermal module such that each of the second thermal modules accommodates tolerance variation in its respective thermoelectric module.

Examiner notes that the limitation "...such that each of the second thermal modules accommodates tolerance variation in its respective thermoelectric module" only provides the functional language without adding any sufficient structure to the device to make it patentably distinguishable over the thermoelectric generator of Miyake in view of Brittain. Therefore the limitation has not been given any patentable weight. MPEP §2114. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Regarding claim 9-13, Miyake in view of Brittain further discloses that a compression mechanism comprising spring (12) and metal rod (follower), wherein the compression mechanism is operably coupled with two of the plurality of second thermal modules (2) such that first thermal module (3) and at least one of the plurality of thermoelectric modules (1) is compressed between two of the plurality of second thermal modules (2). Since the compression mechanism comprises a rod and a spring as claimed in the instant Application, the compression mechanism is inherently configured to compress with an actively variable force, to compensate for thermal expansion and thermal contraction of at least one of the plurality of second thermal modules, and to compensate for stack tolerance build-up of the plurality of second thermal modules. Claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. See

MPEP §2112. See also *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977).

Regarding claim 24, Miyake in view of Brittain further discloses that the first fluid (exhaust gas) is at a higher temperature than the second fluid (cooling water) (see fig. 9 and 14).

11. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake in view of Brittain as applied to claim 8 above, and further in view of Sorber (US 4564504).

Applicant is directed above for complete discussion of Miyake in view of Brittain with respect to claim 1, which is incorporated herein. Miyake in view of Brittain is silent as to the use of o-ring slip joint to couple at least one of the plurality of the second thermal modules with at least one other of the second plurality of first thermal modules.

Sorber teaches the use of o-ring slip joint between a pipe and cooling tower house facilitates the expansion and contraction of the cooling tower components during the process (col. 2, lines 1-4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the o-ring slip joint of Sorber in the thermoelectric generator of Miyake in view of Brittain in order to facilitate the expansion and contraction of the components of the heat sink of Miyake in view of Brittain, as taught by Sorber.

Response to Arguments

12. Applicant's arguments with respect to claims 8-16 and 24 have been considered but are moot in view of the new ground(s) of rejection as necessitated by the amendments.

Applicant argues Bass does not disclose "a side of each of the second thermal modules is configured to exchange heat with exactly one of the thermoelectric modules through the second side of the respective thermoelectric module; and each of the second thermal modules is configurable in at least two axes with respect to the first thermal module such that each of the second thermal modules accommodates tolerance variation in its respective thermoelectric module" as recited in claim 8 (see Remarks, pages 3-4).

This argument is persuasive and is moot in view of new ground rejection as necessitated by the amendments and as provided above.

Correspondence/Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GOLAM MOWLA whose telephone number is (571) 270-5268. The examiner can normally be reached on M-F, 0900-1700 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ALEXA NECKEL can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/G. M./
Examiner, Art Unit 1795

/Alexa D. Neckel/
Supervisory Patent Examiner, Art Unit 1795